Louisiana Department of Environmental Quality (LDEQ)
Office of Environmental Services

STATEMENT OF BASIS

Union Carbide Corp
Union Carbide Corp - St Charles Operations
Taft, St. Charles Parish, Louisiana
Agency Interest Number: 2083
Activity Number: PER20030008
Proposed Permit Number: 1909-V1

I. APPLICANT

Company:
Union Carbide Corp - St Charles Operations
PO Box 50
Hahnville, Louisiana 70057-0050

Facility:
St. Charles Operations, Higher Glycols Plant
355 Hwy. 3142 Gate 28, Approximately 2 miles west of Hahnville, on the west bank of the Mississippi River, off LA Highway 3142 at corner of LA Hwy 18. Approximate UTM coordinates are 746.184 km East and 3,319.222 km North, Zone 15.

II. FACILITY AND CURRENT PERMIT STATUS

Union Carbide Corporation, a subsidiary of the Dow Chemical Company, owns and operates a chemical manufacturing facility in St. Charles Parish near Taft. The St. Charles Operations (SCO) facility is an integrated petrochemical manufacturing complex, converting petroleum-based raw materials into a variety of basic building block, intermediate chemicals and plastics. The products from this facility eventually wind-up in thousands of everyday household, business, and consumer products. The facility as a whole started operation before 1969.

Diethylene glycol feed is further refined in the Higher Glycols Plant. Ethylene oxide and diethylene glycol are reacted together to produce triethylene glycol (TEG) and tetraethylene glycol (TTEG). The TEG and TTEG are refined into saleable products for shipment offsite to customers. Crude streams are also sold and shipped offsite to customers.

INVENTORIES

AI ID: 2083 - Union Carbide Corp - St Charles Operations
Activity Number: PER20030008
Permit Number: 1909-V1
Air - Title V Regular Permit Renewal

Stack Information:

ID		Velocity (ft/sec)	Flow Rate (cubic ft/min-actual)	Diameter (feet)	Discharge Area (square feet)	Height (feet)	Temperature (oF)
RLP086	815 - Column C-2336R (E-2329B Vent)	39	115	.25		86	130
RLP087	3300 - Column C-2360 (E-2369 Vent)	30	41	.13		85.5	130
RLP088	3301 - Column C-2380/C-2410 (E-2399 Vent)	26	35	.13		71.5	130

Fee Information:

Subj Item Id	Multiplier	Units Of Measure	Fee Desc
GRP150	60	MM Lb/Yr	0630 - Organic Oxides, Alcohols, Glycols (Rated Capacity)

INVENTORIES

AI ID: 2083 - Union Carbide Corp - St Charles Operations
Activity Number: PER20030008
Permit Number: 1909-V1
Air - Title V Regular Permit Renewal

Subject Item Inventory:

ID	Description	Tank Volume	Max. Operating Rate	Normal Operating Rate	Contents	Operating Time
EQT819	41 - Tank (D-2355)	46537 gallons	1.13 MM gallons/yr		Crude Triethylene Glycol	8760 hr/yr (All Year)
EQT820	816 - Jet Seal Pot	317 gallons		993.51 lb/hr		8760 hr/yr (All Year)
EQT821	3302 - Tank - Upper Compartment (D-2426)	11016 gallons		3.59 MM gallons/yr	Tetraethylene Glycol	8760 hr/yr (All Year)
EQT822	3303 - Tank - Lower Compartment (D-2427)	11016 gallons		3.59 MM gallons/yr	Tetraethylene Glycol	8760 hr/yr (All Year)
EQT823	Reactor C-2310R					8760 hr/yr (All Year)
EQT824	Process Wastewater					(None Specified)
EQT825	Maintenance Wastewater					(None Specified)
FUG017	196L - Fugitive Emissions					8760 hr/yr (All Year)
RLP086	815 - Column C-2336R (E-2329B Vent)			235 lb/hr		8760 hr/yr (All Year)
RLP087	3300 - Column C-2360 (E-2369 Vent)			117 lb/hr		8760 hr/yr (All Year)
RLP088	3301 - Column C-2380/C-2410 (E-2399 Vent)			68 lb/hr		8760 hr/yr (All Year)

Subject Item Groups:

ID	Description	Included Components (from Above)
GRP150	Higher Glycols Plant	EQT819 41 - Tank (D-2355)
GRP150	Higher Glycols Plant	EQT820 816 - Jet Seal Pot
GRP150	Higher Glycols Plant	EQT821 3302 - Tank - Upper Compartment (D-2426)
GRP150	Higher Glycols Plant	EQT822 3303 - Tank - Lower Compartment (D-2427)
GRP150	Higher Glycols Plant	EQT823 Reactor C-2310R
GRP150	Higher Glycols Plant	EQT824 Process Wastewater
GRP150	Higher Glycols Plant	EQT825 Maintenance Wastewater
GRP150	Higher Glycols Plant	FUG17 196L - Fugitive Emissions
GRP150	Higher Glycols Plant	RLP86 815 - Column C-2336R (E-2329B Vent)
GRP150	Higher Glycols Plant	RLP87 3300 - Column C-2360 (E-2369 Vent)
GRP150	Higher Glycols Plant	RLP88 3301 - Column C-2380/C-2410 (E-2399 Vent)

Relationships:

Subject Item	Relationship	Subject Item
EQT823 Reactor C-2310R	Vents to, (routed to)	RLP86 815 - Column C-2336R (E-2329B Vent)

Stack Information:

ID		Velocity (ft/sec)	Flow Rate (cubic ft/min-actual)	Diameter (feet)	Discharge Area (square feet)	Height (feet)	Temperature (oF)
EQT819	41 - Tank (D-2355)			.25		20	130
EQT820	816 - Jet Seal Pot			.17		10	131
EQT821	3302 - Tank - Upper Compartment (D-2426)			.83		30	100
EQT822	3303 - Tank - Lower Compartment (D-2427)			.83		30	100

Union Carbide Corp
Union Carbide Corp - St Charles Operations
Taft, St. Charles Parish, Louisiana
Agency Interest Number: 2083
Activity Number: PER20030008
Proposed Permit Number: 1909-V1

III. PROPOSED PROJECT/PERMIT INFORMATION

Application

A permit application and Emission Inventory Questionnaire were submitted by Union Carbide Corp on April 11, 2003, requesting a Part 70 operating permit renewal. An updated application dated October 17, 2006, as well as additional information dated February 16, 2007 was also received.

Project

There is no "project" associated with this application. No physical modifications or changes in the method of operation that would result in an increase of emissions are being incorporated into the permit. The ethylene oxide emissions change is due to change in calculation methodology to follow EPA protocol using leak/no-leak for fugitive emissions. Other increases in emissions are due to round-off differences between the Title V Permit and the emissions calculations.

Proposed Permit

Permit 1909-V1 will be the renewal Part 70 operating permit for the Higher Glycols Plant.

Permitted Air Emissions

Estimated emissions in tons per year are as follows:

Pollutant	Before	After	Change
PM_{10}	-	-	-
SO_2	-	-	-
NO_X	-	-	-
CO	-	-	-
VOC *	9.94	13.30	+3.36

* Includes 8.76 tons of LAC 33:III Chapter 51 Toxic Air Pollutants (TAPs).

IV REGULATORY ANALYSIS

The applicability of the appropriate regulations is straightforward and provided in the Specific Requirements section of the proposed permit. Similarly, the Monitoring, Reporting and Recordkeeping necessary to demonstrate compliance

with the applicable terms, conditions and standards are also provided in the Specific Requirements section of the proposed permit.

Prevention of Significant Deterioration/Nonattainment Review

Prevention of Significant Deterioration does not apply to this permit.

Streamlined Equipment Leak Monitoring Program

For the Higher Glycols Plant, fugitive emissions are subject to the requirements of 40 CFR 63 Subpart H, 40 CFR 60 Subpart VV, and LAC 33:III.2121. Among these regulations, 40 CFR 63 Subpart H is the overall most stringent program. Therefore, fugitive emissions shall be monitored as required by this program (40 CFR 63 Subpart H).

Unit or Plant Site	Program Being Streamlined	Stream Applicability	Overall Most Stringent Program
Higher Glycols Plant	40 CFR 63 Subpart H – HON	≥ 5% VOHAP	40 CFR 63 Subpart H – HON
	40 CFR 60 Subparts VV – NSPS for Equipment Leaks of VOC in SOCMI or Refineries	≥ 10% VOC	
	LAC 33:III.2121 – Fugitive Emission Control	≥ 10% VOC	

MACT Requirements

The MACT Requirements and analysis can be found in the Specific Requirements section of the proposed permit.

Air Quality Analysis

Dispersion Model Used: ISCST3

Pollutant	Time Period	Calculated Maximum Ground Level Concentration	Louisiana Toxic Air Pollutant Ambient Air Quality Standard or (National Ambient Air Quality Standard {NAAQS})
Ethylene Oxide	Annual Avg.	0.66 $\mu g/m^3$	1.00 $\mu g/m^3$

General Condition XVII Activities

The facility will comply with the applicable General Condition XVII Activities emissions as required by the operating permit rule. However, General Condition XVII Activities are not subject to testing, monitoring, reporting or recordkeeping requirements. For a list of approved General Condition XVII Activities, refer to the Section VIII – General Condition XVII Activities of the proposed permit.

Insignificant Activities

All Insignificant Activities are authorized under LAC 33:III.501.B.5. For a list of approved Insignificant Activities, refer to the Section IX – Insignificant Activities of the proposed permit.

V. PERMIT SHIELD

none

VI. PERIODIC MONITORING

Fugitive emissions from equipment are monitored per 40 CFR 63 Subpart H. Heat exchange systems are monitored per 40 CFR 63.104 (f) under Subpart F as applicable.

VII. GLOSSARY

Carbon Monoxide (CO) – A colorless, odorless gas, which is an oxide of carbon.

Maximum Achievable Control Technology (MACT) – The maximum degree of reduction in emissions of each air pollutant subject to LAC 33:III.Chapter 51 (including a prohibition on such emissions, where achievable) that the administrative authority, upon review of submitted MACT compliance plans and other relevant information and taking into consideration the cost of achieving such emission reduction, as well as any non-air-quality health and environmental impacts and energy requirements, determines is achievable through application of measures, processes, methods, systems, or techniques.

Hydrogen Sulfide (H_2S) – A colorless inflammable gas having the characteristic odor of rotten eggs, and found in many mineral springs. It is produced by the reaction of acids on metallic sulfides, and is an important chemical reagent.

New Source Review (NSR) – A preconstruction review and permitting program applicable to new or modified major stationary sources of air pollutants regulated under the Clean Air Act (CAA). NSR is required by Parts C ("Prevention of Significant Deterioration of Air Quality") and D ("Nonattainment New Source Review").

Nitrogen Oxides (NO_X) – Compounds whose molecules consist of nitrogen and oxygen.

Organic Compound – Any compound of carbon and another element. Examples: Methane (CH_4), Ethane (C_2H_6), Carbon Disulfide (CS_2)

Part 70 Operating Permit – Also referred to as a Title V permit, required for major sources as defined in 40 CFR 70 and LAC 33:III.507. Major sources include, but are not limited to, sources which have the potential to emit: ≥10 tons per year of any toxic air pollutant; ≥25 tons of total toxic air pollutants; and ≥100 tons per year of regulated pollutants (unless regulated solely under 112(r) of the Clean Air Act) (25 tons per year for sources in non-attainment parishes).

PM_{10} – Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by the method in Title 40, Code of Federal Regulations, Part 50, Appendix J.

Potential to Emit (PTE) – The maximum capacity of a stationary source to emit any air pollutant under its physical and operational design.

Prevention of Significant Deterioration (PSD) – A New Source Review permitting program for major sources in geographic areas that meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. PSD requirements are designed to ensure that the air quality in attainment areas will not degrade.

Sulfur Dioxide (SO_2) – An oxide of sulfur.

Sulfuric Acid (H_2SO_4) – A highly corrosive, dense oily liquid. It is a regulated toxic air pollutant under LAC 33:III.Chapter 51.

Title V Permit – See Part 70 Operating Permit.

Volatile Organic Compound (VOC) – Any organic compound, which participates in atmospheric photochemical reactions; that is, any organic compound other than those, which the administrator of the U.S. Environmental Protection Agency designates as having negligible photochemical reactivity.